83927
S/051/60/009/004/030/034
E201/E191

The Effect of Temperature on Two Series of Bands in the Green Fluorescence Spectrum of Pure Cadmium Sulphide at Low Temperatures

heating to 77 °K did not produce the second series. In crystals with both series at 4 °K heating to 77 °K weakened the bands of the second series so that only the first series (slightly broadened) remained at 77 °K, as shown in Fig 1. On application of an electric field (about 1 kV/cm) to a crystal immersed in liquid helium and exhibiting both series, the intensity of the first series bands was raised and the intensity of the second series was lowered, as shown in Fig 2. Further studies of the effects of electric fields are proceeding. Acknowledgement is made to N.M. Reynov for his help in work with liquid helium. There are 2 figures and 4 references: 1 Dutch, 1 French and 2 mixed (English, German, Dutch, Russian and French).

SUBMITTED: May 3, 1960

Card 2/2

29693
S/181/61/003/010/019/036
B104/B108

24,2100 (1147, 1164, 1482)

AUTHORS: Gross, Ye. F., Zakharchenya, B. P., and Razbirin, B. S.

TITLE: Magneto-optical effects in the absorption spectrum of a cadmium-sulfide crystal

PERIODICAL: Fizika tverdogo tela, v. 3, no. 10, 1961, 3083 - 3091

TEXT: The Zeeman displacement of the two groups of absorption lines of cadmium-sulfide crystals was investigated (4889 - 4860 Å; 4860 - 4660 Å). Experiments were made in magnetic fields of up to 35,000 oe at temperatures of 4.2 and 1.3 °K. The long-wave group was investigated with the aid of thin crystals (from ~1μ up to some tens of microns). The dispersion of the diffraction-grating spectrograph used was 4 Å/mm and 1.7 Å/mm. Line splitting was found to depend on the polarization and on the direction of the magnetic field. A diamagnetic line shift was observed which is increasing with the magnetic field strength and with the quantum number (in the case of the hydrogen-like lines). The Zeeman splitting of the weak lines between 4889 and 4854 Å was not uniform for all lines studied. In a discussion of these results the authors show that

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Magneto-optical effects in the...

an electric field acts on the exciton levels in a magnetic field. A. G. Samoylovich and L. A. Korenblit (DAN SSSR, 100, 43, 1955) studied the action of a Lorentz field on an exciton moving in a magnetic field. The results obtained here are explained as follows: The excitons of a CdS crystal have a dipole moment caused by the asymmetry of the intra-crystalline field. The axis of this dipole is directed along the optical axis $\vec{A}$ of the crystal. If $\vec{A} \parallel \vec{H}$, the electric Lorentz field is perpendicular to the dipole axis, and if $\vec{A} \perp \vec{H}$, it is parallel to the dipole axis. In the first case, the Stark effect obviously reaches a minimum. In the second case, a Stark effect is observed on exciton levels of greater radii. The discovered diamagnetic shift of absorption lines confirms the existence of exciton series which are related to the complex band structure in a CdS crystal. The Zeeman effect proves the complex energy structure of an exciton in a CdS crystal. The appearance of a Lorentz field in magneto-optical exciton effects indicates the existence of a movable exciton system. There are 3 figures, 2 tables, and 12 references: 8 Soviet and 4 non-Soviet. The three most recent references to English-language publications read as follows: E. F. Gross, J. Phys. Chem. Sol., 8, 172, 1959; J. J. Jopfield and J. G. Thomas, Phys.

Card 2/3

29693
S/181/61/003/010/019/036
B104/B108

Magneto-optical effects in the...

Rev. Sit., 1, 7, 1960; R. G. Wuler and J. O. Dimmok, Phys. Rev. Sit., 3, 372, 1959.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR Leningrad (Physicotechnical Institute imeni A. F. Ioffe, AS USSR, Leningrad)

SUBMITTED: May 17, 1961

Card 3/3

9.4160
26.2421

2444
S/051/61/011/001/001/006
E036/E435

AUTHORS: Gross, Ye.F., Bancie-Grillot, M., Grillot, E. and Razbirin, B.S.

TITLE: Effect of machining on the absorption spectrum of cadmium sulphide crystals at low temperature

PERIODICAL: Optika i spektroskopiya, 1961, Vol.11, No.1, pp.84-86

TEXT: The absorption spectrum of cadmium sulphide crystals, obtained by different methods, were examined experimentally at 4.2°K. It was established that grinding and polishing lead to a significant change in the character of the spectrum in the region of the absorption edge. The results obtained are discussed and interpreted. Two of the authors have previously reported a group of fine, weak lines at the absorption edge of cadmium sulphide single crystals at 4.2°K, which were not due to absorption in the basic lattice (Ref.1: Gross, Ye.F. and Karryyev, N.A., DAN SSSR, 84, 471, 1952; ibid 102, 485, 1955). In addition it had also been found (Ref.4: E.Grillot, J.Phys.Rad., 17, 671, 1956; E.Grillot, M.Bancie-Grillot. Festkörper-phys. Akad. Verlag, s.226-243. Berlin, 1958; Izv. AN SSSR, ser. fiz., 22, 1356, 1958) that the method of

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Effect of machining ...

growing the very pure crystals had a marked effect on some of the optical properties. The investigation of crystals grown by the Frerichs method (Ref.5: Phys.Rev., 72, 594, 1947) and by a method developed by one of the authors (Ref.6: E.Grillot, Compt. rend., 242, 779, 1956) was therefore undertaken at 4.2°K. As the absorption is so high, it is necessary to employ very thin crystals, these being obtained by cutting and polishing, in one case to 20 microns crystals grown by the second method above which are very thick (up to 5 mm). The latter crystals did not exhibit the line structure of the absorption edge which was very clear in crystals of the same thickness grown by the Frerichs' method. Furthermore, the absorption edge was blurred and displaced towards the longer wavelength, by about 20 Å as in curve a of Fig.1, where the absorption is plotted in arbitrary units against wavelength λ, Å; the curve b is for the Frerichs crystal of the same thickness (20 μ). That the effect was due to grinding and polishing was proved by taking a thick crystal grown by the Frerichs' method (120 μ) which exhibited the line structure at the absorption edge and grinding and polishing to 80 μ when the line structure disappeared. Also, if a piece is broken off a crystal

Effect of machining ...

grown by the newer technique so that the observation can be made without polishing the line structure is observed. Thus it is established that working the surface gives rise to an additional continuous absorption spectrum. The authors suggest that this could be due to one of two possibilities. One is that the cubic modification of CdS is formed by working the surface and the absorption edge of this form is known to be displaced towards the red (Ref.8: E.Mollwo. Reichsber. Phys, 1, 1, 1944; F.Möglich, Arbeitstag. Festkörperphys., 11, 94, 1955). The other possibility is that the working causes an amorphous layer to form on the surface or to a large number of defects and strains which could alter the crystal parameters. There are 2 figures and 9 references: 4 Soviet-bloc and 5 non-Soviet-bloc. The references to English language publications read as follows: R.Frerichs. Phys.Rev., 72, 594, 1947; P.B.Hirsch, I.N.Kellar, Nature, 162, 609, 1948.

SUBMITTED: August 1, 1960

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Effect of machining ...

Fig.1. Absorption spectrum of CdS obtained by the method described by Grillot (Ref.4).

The lines λ = 4889, 4864, 4861 and 4857 Å were obscured on the original prints and are not reproduced here because of their weak intensity.

29814
S/020/61/140/006/010/030
B104/B102

9.4160
26.2421

AUTHORS: Gross, Ye. F., Corresponding Member AS USSR, Razbirin, B. S., and Safarov, V. I.

TITLE: The Stark effect on the exciton levels of a cadmium-sulfide crystal

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 140, no. 6, 1961, 1285 - 1288

TEXT: The authors studied the Stark effect on the exciton lines of the absorption spectrum of thin CdS crystals (from some tenths of microns up to 10μ) at 4.2°K. When examining the first series of lines, $\Gamma_7 - \Gamma_9$ the authors used an electric field whose direction coincided with the optical axis C of the crystal. If the polarization of light is parallel to the optical axis ($E \| C$), the lines corresponding to the excited exciton states will be most sensitive to the electric field. Up to electric field strengths of 10 to 15 kv/cm no shift of the line n = 1 of this series was observed. From 100 v/cm onward the lines n = 2, n = 3 and n = 4 showed a broadening. The short-wave component was shifted toward the violet,

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The Stark effect on the exciton levels ...

and the satellite line λ = 4814.8 Å of the line λ = 4813.2 Å (n = 2) was shifted toward the red. When the polarization of light was perpendicular to the optical axis (E⊥C), the line n = 1 of the first series showed no shift. The satellite of the line n = 2 and its short-wave component are polarized in an electric field with E⊥C. The long-wave component of the line n = 2 is polarized in an electric field with E∥C. The Stark effect of the lines n = 3 and n = 4 with E⊥C could not be examined. The Stark effect in electric fields perpendicular to the optical axis of the crystals showed the same character. The first line (n = 1, λ = 4826.5 Å) of the second series of lines ($\Gamma_7 - \Gamma_7$) showed no Stark effect up to field strengths of 10 - 15 kv/cm. The second line (n = 2, λ = 4785 Å), was split up into two lines, independently of the orientation of the electric field to the optical axis of the crystal. With increasing field strength the short-wave component shifted toward the violet, while the long-wave component shifted in opposite direction. The results obtained here indicate that the exciton dimensions in a CdS crystal are large and increase with increasing line frequency (quantum number n). The intensity of the satellites of the lines n = 2 and n = 3 increases with increasing field

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strength. The results obtained agree with those of J. L. Birman (Ref. 9), D. G. Thomas et al. (Ref. 6), and A. Lempicki (Ref. 10). There are 4 figures and 10 references: 6 Soviet-bloc and 4 non-Soviet. The three most recent references to English-language publications read as follows: Ref. 6: D. G. Thomas, J. J. Hopfield, Phys. Rev. 116, 573 (1959); Ref. 9: J. L. Birman, Phys. Rev. Letters, 2, no. 4, 157 (1959); Ref. 10: A. Lempicki, Proc. Phys. Soc., 74, no. 475, 138 (1959).

SUBMITTED: July 26, 1961

24.3500 (1137, 1138, 1144)
26.2421

33359
S/181/62/004/001/032/052
B104/B102

AUTHORS: Gross, Ye. F., and Razbirin, B. S.

TITLE: Fine structure of the exciton absorption lines of cadmium sulfide single crystals

PERIODICAL: Fizika tverdogo tela, v. 4, no. 1, 1962, 207 - 212

TEXT: The fine structure of exciton absorption lines (λ = 4853.0 Å; λ = 4813.2 Å; λ = 4805.8 Å; λ = 4803.5 Å) was studied by light polarized parallel and perpendicular to the optical axis of a CdS crystal. The fine structure of the first two lines is fully described. The behavior of these lines cannot be explained with the ordinary crystal optics. The authors attempt to explain it by using assumptions by S. I. Pekar (ZhETF, 33, 1022, 1957; 34, 1176, 1958, 36, 451, 1959; 38, 1786, 1960; 35, 522, 1958; FTT, 2, 261, 1960). Hence in the exciton absorption range longitudinal and transverse excitons may propagate in a crystal. If the smallness of the light wave vector is not neglected their frequencies are different. The components λ_1 = 4853.0 Å and λ_2 = 4854.8 Å of the first line of the exciton series $\Gamma_9 - \Gamma_7$ and the components λ_3 = 4813.2 Å and λ_4 = 4814.0 Å of the

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Fine structure of the exciton...

second line of this series are considered to be frequencies of longitudinal and transverse excitons in the CdS crystal. Owing to experimental difficulties the dependence of the exciton absorption lines on the angle between light beam and optical axis could not be proved as is required by Pekar's theory. There are 3 figures and 14 references: 10 Soviet and 4 non-Soviet. The four references to English-language publications read as follows: W. R. Heller, A. Marcus, Phys. Rev., 84, 809, 1951; J. J. Hopfield, D. G. Thomas, J. Phys. Chem. Sol., 12, 276, 1959; J. L. Birman, Phys. Rev. Lett., 2, 157, 1959; D. G. Thomas, J. J. Hopfield, Phys. Rev., 116, 573, 1959.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR Leningrad (Physicotechnical Institute imeni A. F. Ioffe AS USSR, Leningrad)

SUBMITTED: July 27, 1961

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X

33360
S/181/62/004/001/033/052
B104/B102

24,3500 (1137, 1138, 1144)
26.2421

AUTHORS: Gross, Ye. F., Razbirin, B. S., and Shekhmamet'yev, R. I.

TITLE: Spectral distribution of the excitation of edge luminescence of CdS crystals

PERIODICAL: Fizika tverdogo tela, v. 4, no. 1, 1962, 213 - 216

TEXT: The authors studied the excitation spectrum of green luminescence of CdS crystals at 77°K. An incandescent lamp whose light fell on the crystal surface through a monochromator with an angle of 50 - 80° served as light source. According to the shape of their luminescent excitation curves the CdS crystals can be divided into two groups. In the first group the maxima of the excitation curves of green luminescence coincide with the absorption lines of the crystals. In the second group the minima of these curves coincide with the absorption lines. If a crystal of the first group is heated to 250°C and then rapidly cooled in liquid nitrogen it then belongs to group two. By heating crystals of the second group they could not be transformed into crystals of the first group. Due to these heat treatments only the minima became more shallow and the short-wave part of the luminescence excitation curve became more intense. This property of the CdS

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S/181/62/004/001/033/052
B104/B102

Spectral distribution of the excitation...

crystals is explained by the fact that photoconductivity and luminescence are produced by the excitons. The maxima and minima of the excitation curves and their behavior on heat treatment is related to the annihilation (recombination) of excitons. B. V. Novikov (FTT, 1, 357, 1959; ZhTF, XXVIII, 782, 1958) is mentioned. There are 2 figures and 8 references: 6 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: C. C. Klick. Phys. Rev., 86, 659, 1952; 89, 274, 1953; D. Datton. J. Phys. a. Chem. Sol., 6, 101, 1958.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)

SUBMITTED: August 3, 1961

X

Card 2/2

44184
S/181/62/004/012/048/052
B125/B102

AUTHORS: Gross, Ye. F., Razbirin, B. S., and Sokolov, V. I.

TITLE: Bound excitons and band structure in a CdS-crystal

PERIODICAL: Fizika tverdogo tela, v. 4, no. 12, 1962, 3673-3675

TEXT: The hypothesis that bound excitons are produced from free excitons of the type $(\Gamma_9-\Gamma_7)$ and from free excitons of the type $(\Gamma_7-\Gamma_7)_1$ at the shift of the level of the free excitons near the lattice defect is confirmed by the following characteristics of the exciton spectrum: (The complex structure of the valence band in CdS-crystals is a function of a corresponding sub-band, according to J.S.Birman (Phys. Rev. Lett., 2, 157, 1959) and Ye. F. Gross et al. (DAN SSSR, 140, 1285, 1961; FTT, 4, 207, 1962)). The single line λ4888.6 Å and group of lines in the interval 4870-4858 Å belong to the first term (n=1) of the exciton series $(\Gamma_9-\Gamma_7)$. The lines 4864.0; 4861.0 and 4838 Å belong to the first term of the exciton series $(\Gamma_7-\Gamma_7)_1$. The lines 4864.0; 4861.0 and 4888.6 Å are connected with the same impurity center. The fine lines 4820.5 and 4818.3 Å observed in

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the region of exciton lines are caused by the excited states n=2 or n=3 of the exciton ($\Gamma_9-\Gamma_7$). There is a correlation between exciton lines and corresponding fine lines. The spectrum of free and bound excitons is shown in Fig. 1. The different influence of the CdS-crystal deformation on each type of free and bound excitons is verified by continuing previous investigations (of Ye. F. Gross, B. S. Razbirin (ZhTF, 27, 2173, 1957; 28, 237, 1958) of absorption and reflection spectra of a crystal having one end attached to a glass base. The lines of the series ($\Gamma_9-\Gamma_7$) and the corresponding lines of bound excitons are notably more curved than those of the series ($\Gamma_7-\Gamma_7$) and the corresponding lines of the bound excitons. Lines that appertain to free and the corresponding bound excitons in one series are the same. This characteristic of free and bound excitons produced from the same valence sub-band is also confirmed the shift of the lines caused by temperature. There are 2 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR, Leningrad (Physicotechnical Institute imeni A. F. Ioffe AS USSR, Leningrad)

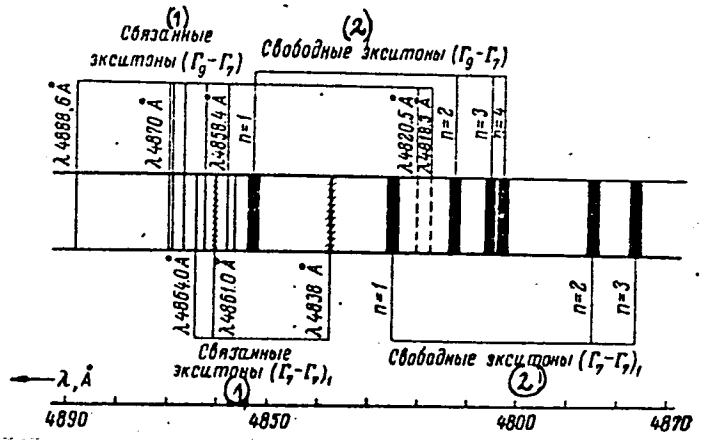
S/181/62/004/012/048/052
B125/B102

Bound excitons and band...

SUBMITTED: August 3, 1962

Fig. 1. The scheme of the free and bound exciton absorption spectrum in a CdS-crystal (T = 4.2°K).

Legend: (1) Bound excitons, (2) free excitons



Card 3/3

GROSS, Ye.F.; RAZBIRIN, B.S.; PERMOGOROV, S.A.

Free and bound excitons in cadmium sulfide crystals and the analogue of the Mössbauer effect in optics. Dokl. AN SSSR 147 no.2:338-341 N '62. (MIRA 15:11)

1. Chlen-korrespondent AN SSSR (for Gross).
(Cadmium sulfide crystals)
(Excitons) (Mössbauer effect)

S/0181/64/006/001/0318/0320

ACCESSION NO: AP4011780

AUTHOR: Razbirin, B. S.

TITLE: Fringe radiation of crystals

SOURCE: Fizika tverdogo tela, v. 6, no. 1, 1964, 318-320

TOPIC TAGS: cadmium sulfide crystal, zinc sulfide crystal, fringe radiation, exciton, green luminescence, blue luminescence, resonance line

ABSTRACT: CdS crystals have been studied at a temperature of 4.2K in order to determine the action of excitons in the phenomenon of fringe radiation. The investigation proved a correlation between fringe radiation (green luminescence) and blue luminescence in those crystals of CdS whose spectra contain the resonance line of blue emission λ 4888.6 Å. The simultaneous appearance of green luminescence and of line λ 4888.6 Å proves that both are related to the same inclusion center. Since it has been recently established that the latter line belongs to an exciton bound to a neutral acceptor, it is possible to assume that the presence of green luminescence is conditioned by the presence of a neutral acceptron inclusion. These data make it possible to propose a new hypothesis pertaining to the origin of fringe radiation. It may be assumed that green luminescence represents the result

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ACCESSION NO: AP4011780

of interaction between an exciton and an inclusion center and that it is caused by the destruction of the exciton and by the simultaneous ionization of the center. In such a case, together with the line produced by the destruction of an exciton, there must appear another line of radiation, removed from the first one toward the long wave band by a distance E_i (ionization energy of the inclusion center). Should it be further assumed that a free exciton as well as a bound one may be annihilated (with a corresponding ionization of a center), then two series of green luminescence can be expected. The "dissociated" line of each series will be removed from a corresponding exciton line by the same magnitude of E_i equal to 0.12 ev. This hypothesis is supported by the temperature relationships of CdS luminescences discussed by M. Bancie-Grillot, E. Gross, E. Grillot, and B. Razbirine (Comptes Rend., 250, 2868, 1960). As the temperature is raised from 4 to 77K, the line of bound exciton and the corresponding long-wave green series weaken, while the free exciton line (λ 4853 Å) and the corresponding short-wave green series grow stronger. This explanation may serve not only for CdS but also for other crystals. The author thanks professor Ye. F. Gross for his interest and for the discussion of this work. Orig. art. has: 2 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR, Leningrad (Physical and Technical Institute AN SSSR)

Card 2/32 Sub 14 Aug 63

ACCESSION NR: AP4019969 S/0020/64/154/006/1306/1309

AUTHORS: Gross, Ye.F. (Corr. member AN SSSR);); Permogorov, S.A.; Razbirin, B.S.

TITLE: An optical analog of the Mossbauer effect

SOURCE: AN SSSR. Doklady*, v. 154, no. 6, 1964, 1306-1309

TOPIC TAGS: optics, Mossbauer effect, phononless transition, crystal, crystal spectrum, cadmium sulfide, cadmium selenide, zinc sulfide

ABSTRACT: Very sharp lines have been found in crystals such as CdS, CdSe, ZnS, and some others in both emission and absorption at 4K near the fundamental absorption edge (see Fig. 1 of the Enclosure). Their width is about 10^{-4} ev. The purely electronic (phononless) transitions which correspond to these lines seem to be similar to the narrow lines in the gamma spectra (Mossbauer effect). The present authors have investigated the temperature dependence of these lines in the range between 4 and 26K (see Fig.2 of the Enclosure). This dependence is similar to that of the Mossbauer effect except that the tempera-

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ACCESSION NR: AP4019969

ture range is much lower than that for the latter. "The authors are grateful to Ye. D. Trofimov for many discussions." Orig. art. has: 3 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A.F. Joffe Akademii nauk SSSR. (Physicotechnical Institute, Academy of Sciences,SSSR)

SUBMITTED: 07Sep63 ATD PRESS: 3055 ENCL: 02

SUB CODE: SS, OP NO REF SOV: 008 OTHER: 008

Card 2/4

ACCESSION NR: AP4019969

ENCLOSURE: 01

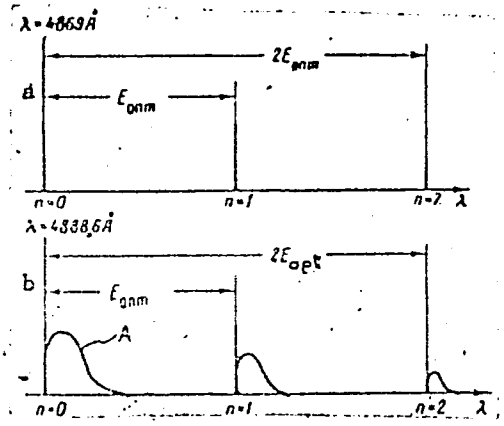

Fig. 1. Schematic representation of electron vibrational spectrum for the irradiation of CdS crystal at T = 4.2K: a - in the case of the interaction with optical phonons only; b - in the case of interactions with optical and acoustic (A) phonons

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ACCESSION NR: AP4019969

ENCLOSURE: 02

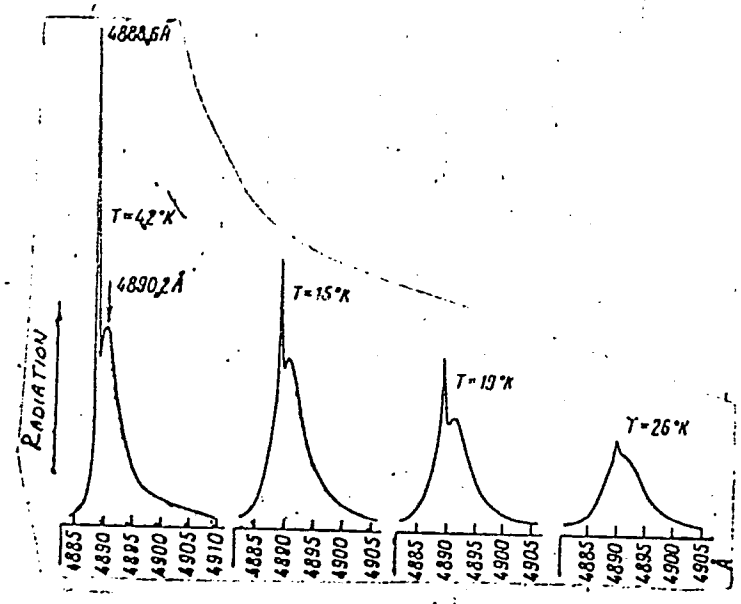

Fig. 2. Change of the line λ = 4888.6Å and the band, depending upon interactions with acoustic phonons and the temperature

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L 36312-65 EWT(l)/EWT(m)/T/EWP(t)/EEC(b)-2/EWP(b)/EWA(c) IJP(c) JD
ACCESSION NR: AP5005301 S/0181/65/007/002/0558/0564

AUTHOR: Gross, Ye. F.; Razbirin, B. S.; Permogorov, S. A.

TITLE: Afterglow and dependence of the edge radiation spectrum of single-crystal cadmium sulfide on the excitation intensity

SOURCE: Fizika tverdogo tela, v. 7, no. 2, 1965, 558-564

TOPIC TAGS: cadmium sulfide, single crystal, edge radiation, spectrum analysis, afterglow, luminescence center

ABSTRACT: The spectrum was investigated at temperatures of 4.2—77K. The luminescence was excited with light at a wavelength in the region of the intrinsic absorption of the crystal. The light source was a high-pressure mercury arc VRSh-250. A monochromator with photoelectric attachment was used to record the spectra. The results show that the spectrum of the edge radiation depends on the intensity of the exciting light. This dependence is due to the fact that different portions of the spectrum have different luminescence times. The spectrum of the afterglow of the edge radiation of CdS was investigated at T = 4.2K, as well as the temperature dependence of the afterglow spectrum in the interval 4.2—77K. Although early in-

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L 36312-65
ACCESSION NR: AP5005301

vestigations have shown that at low intensities there are three groups of CdS crystals, each with a different type of edge luminescence spectrum, the differences become less pronounced at increased intensity. This indicates that the different sections of the spectrum have a different intensity dependence. It is concluded on the basis of the results that the edge radiation is a consequence of a transition of an electron from a shallow level in the conduction band to a deeper level in the valence band. This is confirmed by the strong temperature dependence of the edge luminescence at low temperature (4—30K). The center responsible for the edge luminescence can be described by the donor-acceptor pair model proposed by F. E. Williams (J. of Phys. Chem. of Solids, v. 12, 265, 1960). The differences between the de-excitation times of the portions of the edge radiation maxima can be attributed to differences in the distances between the donors and the acceptors. Orig. art. has: 4 figures. [02]

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR, Leningrad (Physicotechnical Institute AN SSSR)

SUBMITTED: 08Aug64 ENCL: 00 SUB CODE: SS, OP
NO REF SOV: 007 OTHER: 009 ATD PRESS: 3219

Card 2/2

L 47053-66 EWT(1)/T IJP(c)

ACC NR: AP6015467 SOURCE CODE: UR/0181/66/008/005/1483/1492

AUTHOR: Gross, Ye. F.; Permogorov, S. A.; Razbirin, B. S.

ORG: Physics Engineering Institute im. A. F. Ioffe, AN SSSR, Leningrad (Fiziko-tekhnicheskiy institut AN SSSR)

TITLE: The motion of free excitons and their interaction with phonons

SOURCE: Fizika tverdogo tela, v. 8, no. 5, 1966, 1483-1492

TOPIC TAGS: exciton, phonon interaction, phonon spectrum, cadmium sulfide crystal, crystal optic property, luminescence, luminescent crystal

ABSTRACT: An investigation is made of the possibility of the manifestation of the kinetic energy of freely moving excitons in an exciton luminescence spectrum. Differences are noted among the processes of a phononless, a one-phonon, and a two-phonon optic annihilation of excitons, related to the different formulation of the law of conservation of momentum for these processes. The results are used to analyze the exciton luminescence spectrum of CdS single crystals in the temperature range of 4—77K. It is shown that excitons in this case may be considered as free quasiparticles following the Maxwell distribution in the kinetic energies and interacting with phonons with the fulfillment of the law of the conservation of momentum. In

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L 47053-66

ACC NR: AP6015467

4

conclusion, the authors consider it their pleasant duty to express their gratitude to K. K. Rebane, V. V. Khizhnyakov, and A. A. Klochikhin for a fruitful discussion of the results, and to V. A. Abramov for assistance in making the measurements. Orig. art. has: 17 formulas and 4 figures.

SUB CODE: 20/ SUBM DATE: 12Oct65/ ORIG REF: 010/ OTH REF: 007

Card 2/2 ULR

KAZBIRIN, V.S.

24(4) PHASE I BOOK EXPLOITATION SOV/1961

Akademiya nauk Ukrainskoy SSR

Fotoelektricheskiye i opticheskiye yavleniya v poluprovodnikakh; trudy pervogo vsesoyuznogo soveshchaniya po fotoelektricheskim i opticheskim yavleniyam v poluprovodnikakh, g. Kiyev, 20-26 noyabrya 1957 g. (Photoelectric and Optical Phenomena in Semiconductors; Transactions of the First Conference on Photoelectric and Optical Phenomena in Semiconductors...) Kiyev, 1959. 403 p. 4,000 copies printed.

Additional Sponsoring Agency: Akademiya nauk SSSR. Prezidium.

Ed. of Publishing House: I. V. Kistin; Tech. Ed.: A. A. Matveychuk; Resp. Ed.: V. Ye. Lashkarev, Academician, Ukrainian SSR, Academy of Sciences.

PURPOSE: This book is intended for scientists in the field of semiconductor physics, solid state spectroscopy, and semiconductor devices. The collection will be useful to advanced students in universities and institutes of higher technical training specializing in the physics and technical application of semiconductors.

COVERAGE: The collection contains reports and information bulletins (the latter are indicated by asterisks) read at the First All-Union Conference on Optical and Photoelectric Phenomena in Semiconductors. A wide scope of problems in semiconductor physics are considered: photoconductivity, photoelectromotive forces, photoelectric cells, photoluminescence, optical properties, photoelectric radiations, and technology of hard and corpuscular radiations, photoresistors, the actions of hard and corpuscular systems, the properties of thin films and complex semiconductor systems, etc. The materials were prepared for publication by E. I. Rashba, O. V. Snitko, K. B. Tolpygo, A. P. Lubchenko, and M. K. Sheynkman. References and discussion follow each article.

OF SEMICONDUCTORS

Card 4/16

RAZBITNAYA, L.M.; KOROVINA, I.A.

Complexes of cerium, yttrium, and uranyl with some chelate compounds. Part 1: Determination of the composition of complexes of $Ce^{(III)}$, $Y^{(III)}$, and $U^{(VI)}$ with diethylenetriaminopentaacetic and ethyl ether of diaminotetraacetic acids. Radiokhimiia 3 no.5:593-596 '61. (MIRA 14:10)

(Cerium compounds) (Yttrium compounds) (Uranyl compounds) (Acetic acid)

BALAKHIN, V.S., prof.; KAZBINTSEVA, L.I.; KAZUCHITS, N.O.; TIKHONOVA, L.I.; BOKSHA, M.V., red.; POPOVA, S.M., tekhn. red.

[Problem of drawing long-lived radioisotopes out of the body] Problema vyvedeniia iz organizma dolgozhivushchikh radioaktivnykh izotopov. Moskva, Gosatomizdat, 1962. 166 p. (MIRA 15:8)

(RADIATION PROTECTION)

Razbitnaya, L. M.

"Khimicheskaya Zashchita Organizma ot Ionizirnyushchikh Izlucheniy (Chemical Protection of the Organism From Ionizing Radiation)," edited by V. S. Balabukha; Moscow, Atomizdat, 1960, pp 1-151

The volume consists of a table of contents (attached), an introduction in which the author outlines the purpose of the book, and two sections. The first section deals with the problem of the chemical protection of the organism from penetrating radiation. A brief analysis is given of the contemporary state of the problem, data obtained in experiments are cited, and the theories of the mechanism of the protective action of some chemicals (aminothiols and pyrimidine derivatives) are examined.

The second section deals with the problem of the elimination of radioactive isotopes from the organism. The effectiveness of certain chemicals which, when introduced into the organism, have the capacity to form with the isotopes stable compounds which would be readily eliminated from the organism is examined.

PHASE I BOOK EXPLOITATION SOV/6301

Balabukha, V. S., L. M. Razbitnaya, N. O. Razumovskiy, and L. I. Tikhonova.

Problema vyvedeniya iz organizma dolgozhivushchikh radioaktivnykh izotopov (The Problem of Eliminating Long-Lived Radioactive Isotopes From Organisms) Moscow, Gosatomizdat, 1962. 166 p. Errata slip inserted. 4000 copies printed.

Ed.: V. S. Balabukha, Professor. Ed. (Title page): R. V. Boksha; Tech. Ed.: S. M. Popova.

PURPOSE: This book is intended for chemists, biochemists, radiobiologists, and general practitioners.

COVERAGE: The book deals with the elimination of radioactive substances from the body. It discusses the use and effectiveness of complex-forming agents for preventive and therapeutic purposes, the complex formation of chemical elements with organic compounds and methods of determining their composition and stability, and the binding of radioactive isotopes in biological media for their ultimate elimination. No personalities are mentioned. References follow individual chapters.

ACCESSION NR: AP4031099 S/0186/64/006/002/0202/0206

AUTHOR: Razbitnaya, L. M.

TITLE: Complex compounds of cerium, yttrium and uranyl with certain polyaminocarboxylic acids II.

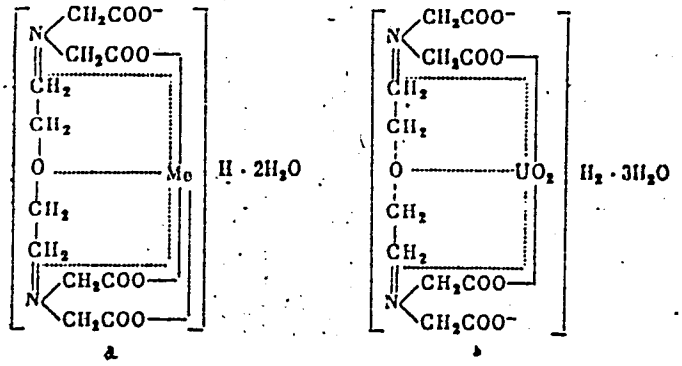
SOURCE: Radiokhimiya, v. 6, no. 2, 1964, 202-206

TOPIC TAGS: cerium, yttrium, uranyl complex, polyaminocarboxylic acid complex, composition, electrophoresis, structure, stability, hydrated solid complex, spectrophotometric analysis

ABSTRACT: The structure and the stability of complex compounds of Ce^{3+}, Y^{3+} and UO_2^{2+} with diethylenetriaminopentaacetic acid (DTPA) and the N,N,N',N'-tetraacetate 2,2'diaminodiethyl ether (DEETA) was studied. The composition of the hydrated solid complexes was determined by microanalysis and spectrophotometricanalysis; The complexes are of the general formula H [MeV] nH_2O, where Me is the cation, V the complexing agent and Me:V = 1:1. The following structural formulas are assigned, in which formulas a and c are for Ce or Y and b and d for UO_2.

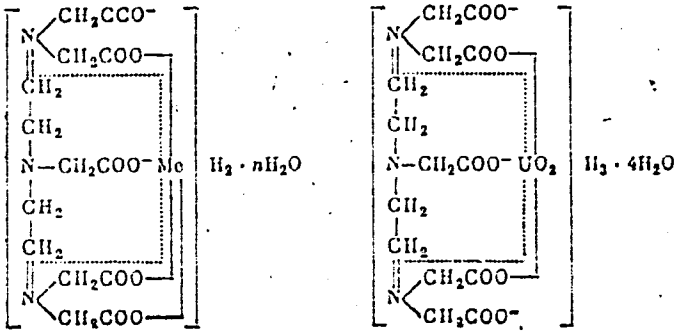
Card 1/4

ACCESSION NR: AP4031099



Card 2/4

ACCESSION NR: AP4031099



c a

Card 3/4

ACCESSION NR: AP4031099

Electrophoresis of the complexes with cerium and yttrium showed they do not decompose under an electric current (the complexes migrated completely to the anodic solution). The cerium and yttrium acid complexes dissolve readily in water (the uranyl complex is less soluble); the compounds lose their water of crystallization above 100C. Orig. art. has: 4 formulae, 1 table and 1 figure.

ASSOCIATION: None

SUBMITTED: 16Jun62	DATE ACQ: 30Apr64	ENCL: 00
SUB CODE: OC	NO REF SOV: 004	OTHER: 003

Card 1/1

L 34132-65

ACCESSION NR: AT5006143 S/0000/64/000/000/0356/0360

AUTHOR: Ivannikov, A. T.; Razbitnaya, L. M.; Smolin, D. D. 8 B+1

TITLE: Effect of N, N, N' - tetra-acetic acid 2, 2' - diaminodiethylsulfide (DDSTA) on the excretion of uranyl nitrate and course of uranium poisoning in rats

SOURCE: Raspredeleniye, biologicheskoye deystviye, uskoreniye vyvedeniya radioaktivnykh izotopov (Distribution, biological effect, acceleration of the excretion of radioactive isotopes); sbornik rabot. Moscow, Izd-vo Meditsina, 1964, 356-360

TOPIC TAGS: uranium compound, poisoning, bone, kidney, blood, complexing agent, therapy

ABSTRACT: DDSTA proved to be an effective complexing agent for uranyl nitrate. It intensified the excretion of uranium from the body whether administered immediately after uranium poisoning or much later when deposition in the tissues and skeleton had already taken place. The complex compound of uranium with DDSTA was excreted with urine. The residual uranium found in the rats was indicative of a marked decrease in uranium deposition in the treated animals, especially in the skeleton (the main depot). The rapid excretion of uranium under the influence

Card 1/2

L 34132-65

ACCESSION NR: AT5006143

of DDSTA had a favorable effect on the course of uranium poisoning. The symptoms of kidney involvement were less distinct in the experimental animals than in the controls and there were no tremors or convulsions. In addition, treatment with DDSTA increased the survival rate of the animals. The authors consider this compound a promising agent for the treatment of uranium poisoning. Orig. art. has 3 figures.

ASSOCIATION: none

SUBMITTED: 10Apr64 ENCL: 00 SUB CODE: LS

NO REF SOV: 000 OTHER: 000

Card 2/2

SMOLIN, D.D.; RAZBITNAYA, L.M.; VIKTOROV, Yu.M.

2,2'-Diaminodiethylsulfide of N,N,N',N'-tetraacetic acid and some inner-complex compounds. Zhur. ob. khim. 34 no.11: 3713-3715 N '64 (MIRA 18:1)

RAZBITNAYA, Ye.P.

A particular case of the restricted problem of three bodies with variable masses. Astron.zhur. 38 no.3:528-531 My-Je '61. (MIRA 14:6)

(Problem of three bodies)

RAZBITNAYA, YE. P.

USSR/Astronomy - Solar Radiation, Nov/Dec 53
Breaking Effect

"Breaking Effect of Solar Radiation on Non-Spherical Bodies," V.V. Radzievskiy and Ye.P Razbitnaya, Yaroslavl State pedagogical Inst im Ushinskiy

Astron Zhur, Vol 30, No 6, pp 616-618

Attempts to prove that formula obtained by H. Robertson (M.N. 97, No 6 [1937]) and V.G. Fesenkov (ibid 23, 6 [1946]) equating the time after which a black spherical body will fall on the sun, due to the breaking effect of solar radiation, may also be applied to nonspherical bodies. Rec 2 Mar 53.
273T72

RAZBITNAYA, Ye. P.

"On the Origin of the Moon." Cand Phys-Math Sci, Leningrad State Pedagogical Inst imeni A. I. Gertsen, Chair of Theoretical Physics, Leningrad, 1954. (KL, No 8, Feb 55)

SO: Sum. No 631, 26 Aug 55-Survey of Scientific and Technical Dessertations Defended at USSR Higher Educational Institutions (14)

BAZBITNOV, Yu.

Leningrad schools in the Great Patriotic War. Prof.-tekh. obr. 22 no.7:25 Jl '65. (MIRA 18:8)

RAZBITNOV, Yuriy Borisovich; ABRAMOV, E.A., kand.istor.nauk, nauchnyy red.; VASIL'YEV, A.V., red.izd-va; GURDZHIYEVA, A.M., tekhn.red.

[Leningrad is one of the largest centers for the training of a labor force] Leningrad - krupneishii tsentr podgotovki rabochikh kadrov. Leningrad, Ob-vo po rasprostraneniiu polit. i nauchnykh znanii RSFSR, Leningr.otd-nie, 1959. 54 p. (MIRA 13:2)
(Leningrad--Labor and laboring classes)
(Technical education)

RAZBITNOV, Yu.B.

From the history of the struggle of the Leningrad party organization to create the state labor reserves of the U.S.S.R. (1940). Trudy LIAP no.25:61-78 '58. (MIRA 11:10)
(Leningrad Province--Labor supply)

DEDOV, V.B.; VOLKOV, V.V.; GVOZDEV, B.A.; YERMAKOV, V.A.; LEBEDEV, I.A.; NAZBITNOY, V.M.; TRUKHLYAYEV, P.S.; CHUBURKOV, Yu.T.; YAKOVLEV, G.N.

Production of Pu^{242} and Cm^{242} from neutron irradiated Am^{241}. Radiokhimiia 7 no.4:453-461 '65. (MIRA 18:8)

L 00037-66 EWT(m) DIAAP

ACCESSION NR: AP5020306 UR/0186/65/007/004/0453/0461

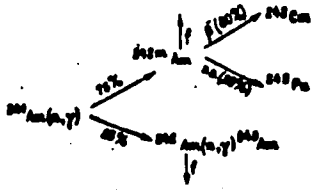
AUTHOR: Dedov, V. B.; Volkov, V. V.; Gvozdev, B. A.; Yermakov, V. A.; Lebedev, I.A.; Razbitnoy, V. M.; Trukhlyayev, P. S.; Chuburkov, Yu. T.; Yakovlev, O. M.

TITLE: Production of Pu-242 and Cm-242 from neutron-irradiated Am-241

SOURCE: Radiokhimiya, v. 7, no. 4, 1965, 453-461

TOPIC TAGS: plutonium, curium, americium, extraction, neutron irradiation

ABSTRACT: Irradiation of Am-242 with thermal neutrons produces Pu^{242}, Cm^{242} and Am^{243} which are of great interest in a number of physical and radiochemical investigations. The synthesis scheme is as follows:



Card 1/2

L 00037-66
ACCESSION NR: AP5020306

The thermal neutron cross section of Am^{241} is 900 barn, thus even upon short irradiation with a high density thermal-neutron beam a significant amount of the above isotopes may be produced. It can be seen from the above process that the yield of fission products is small since they are produced mainly during fission of Am^{242}. This facilitates the chemical processing of irradiated substances. Production of Pu^{242} by this process requires much less time than the method which uses Pu^{239} as starting material. The authors describe the chemical separation of Pu^{242}, Cm^{242} and Am^{243} from irradiated Am^{241}. The scheme for the chemical processing was selected to be such that it would produce rapid separation of the products. The main separation steps involved chromatographic and chemical extraction methods. Chromatographic separation was made extremely difficult by high α-activity due to the presence of Cm^{242}. Chemical processing was carried out in a shielded area on a special stand with remote control of all operations. The article indicates some properties of curium oxalate, potassium curium sulfate, curium hydroxide and curium carbonate. Orig. art. has: 5 tables and 3 figures.

ASSOCIATION: none

SUBMITTED: 18Apr64 ENCL: 00 SUB CODE: GC, NP

NO REF SOV: 004 OTHER: 005

Card 2/2

AUTHORS: Yakovlev, G. N., Gorbenko-Germanov, D. S., SOV/79-28-10-2/60
Rambitnoy, V. M., Kuzanskiy, K. S., Zenkova, R. A.

TITLE: Investigation of the Double Sulfates of Americium According to the Absorption Spectra in the Crystals (Izucheniye dvoynykh sul'fatov ameritsiya po spektram pogloshcheniya v kristallakh)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol 28, Nr 10, pp 2624 - 2637 (USSR)

ABSTRACT: In the present paper the normal sulfate and the double sulfate of americium with potassium, thallium, rubidium and cesium were investigated. The normal sulfate as well as the following double sulfates of americium were identified:

$Am_2(SO_4)_3 \cdot 5H_2O$ $KAm(SO_4)_2 \cdot 2H_2O$ $K_3Am(SO_4)_3 \cdot H_2O$
$TlAm(SO_4)_2 \cdot 4H_2O$ $K_8Am_2(SO_4)_7$
$RbAm(SO_4)_2 \cdot 4H_2O$ $Tl_8Am_2(SO_4)_7$
$CsAm(SO_4)_2 \cdot 4H_2O$ $Cs_8Am_2(SO_4)_7$

Card 1/3 As it is known, the double sulfates of the rare earths

and of the alkali metals are difficult to solve and, therefore, are of importance for the analytical chemistry of these elements.(According to the actinide theory, the transuranic elements are analogs of the rare earths, and in their case the analogy of the chemical properties of many compounds also plays a role, especially the similarity of the double sulfates with the alkali metals). The absorption spectra of the polycrystalline samples of these compounds were taken within the range of 4000-6500 Å at 300, 200 and 80° K(Figs 3-11). Phase diagrams were taken for the synthesis R_2SO_4-$Am_2(SO_4)_3$-H_2O (R=K,Tl and Rb)(Figs 1,2). The split of the electron band Am^{+++}5030 Å in the crystals of the compounds to be investigated was studied. The group of electronically oscillating "bands" within the range of 4500 Å were identified which are not observed in solutions and which are in a high degree sensitive to a change of the composition of the compound. The influence of the temperature and the amount of crystal water on the character of the split of the electron band Am^{+++}5030 Å and the combination

of the above mentioned "bands" within the range of 4500 Å were investigated. There are 11 figures, 6 tables, and 13 references, 3 of which are Soviet.

SUBMITTED: August 16, 1957

LEBEDEV, I.A.; PIROZHKOV, S.V.; RAZBITNOY, V.M.; YAKOVLEV, G.N.

[Complexing of Am^{+3} with oxalaye ions] Izuchenie kompleksoobrazovaniia Am^{+3} s oksalat-ionami. Moskva, In-t atomnoi energii AN SSSR, 1960. 14 p. (MIRA 17:1)

LEBEDEV, I.A.; PIROZHKOV, S.V.; RAZBITNOY, V.M.; YAKOVLEV, G.N.

Complex formation between Am^{3+} and oxlate ions. Radiokhimiia 2 no.3:351-356 '60. (MIRA 13:10)
(Americium compounds) (Oxalates)

LEBEDEV, I. A.; PIROZHKOV, S. V.; RAZBITNOY, V. M.; YAKOVLEV, G. N.

Decomposition of americium oxalate under the action of its own α-radiation. Radiokhimiia 4 no.3:308-312 '62. (MIRA 15:10)

(Americium oxalates) (Alpha rays)

S/186/62/004/003/009/022
E071/E433

AUTHORS: Lebedev, I.A., Pirozhkov, S.V., Razbitnoy, V.M., Yakovlev, G.N.

TITLE: An investigation of the decomposition of americium oxalate under the influence of its own α-radiation

PERIODICAL: Radiokhimiya, v.4, no.3, 1962, 308-312

TEXT: Radiolysis of the oxalate group in solid compounds under the influence of α-radiation has been studied on oxalate of plutonium-239. However, the composition of the gas evolved during the decomposition was not studied. In the present work the authors investigated the decomposition of oxalate of americium-241 by studies of the change in weight of the residue with time, accumulation of carbonate and the amount and composition of gas evolved. It was found that oxalate of trivalent americium on standing is decomposed under the influence of its own α-radiation, passing into carbonate. The decomposition is completed after 15 to 20 days and after 50 to 60 days the composition of the residue corresponds to $Am_2(CO_3)_3 \cdot 5H_2O$. This decomposition is a first order reaction with a velocity

Card 1/2

An investigation of the decomposition ..

constant of 0.22 ± 0.04 $days^{-1}$. The mixture of gases evolved on decomposition consists of CO_2 and CO with a prevalence of CO_2. There are 4 figures and 2 tables.

SUBMITTED: May 29, 1961

Card 2/2

OSIPENKO, T., otborshchitsa; RAZBITSKOVA, A., vagonetchitsa; PASAL'SKAYA, M., vagonetchitsa; KALININA, M., sadchitsa; MOSHAROVA, S., sadchitsa; SIDOROVA, S., inzh.;po ratsionalizatsii; SHISHKANOVA, L.

Mechanization , the homemade way. Rabotnitsa 37 no.7:15 Jl '59. (MIRA 13:1)
(Moscow--Brick industry)

RAZBOINIKOV, Sv.; STAMENOV, Iv.

Little known and rare side effects in corticosteroid therapy.
Suvr. med. (Sofiia) 15 no.9:34-42 '64

RAZBOINIKOV, Sv. St.

A proposal for synthesis of new derivatives of cortisone. Suvrem med., Sofia no.1:123-138 '61.

(ADRENAL CORTEX HORMONES chem)

RAZBOINIKOV, Sv.; ASTRUG, A.

Studies on the mucoprotein level in normal subjects. Suvr. med. (Sofiia) 16 no.10:598-602 '65.

1. Kafedra po bolnichna terapiia, Vissh. meditsinski institut, Sofiia (rukovoditel - prof. A. Pukhlev).

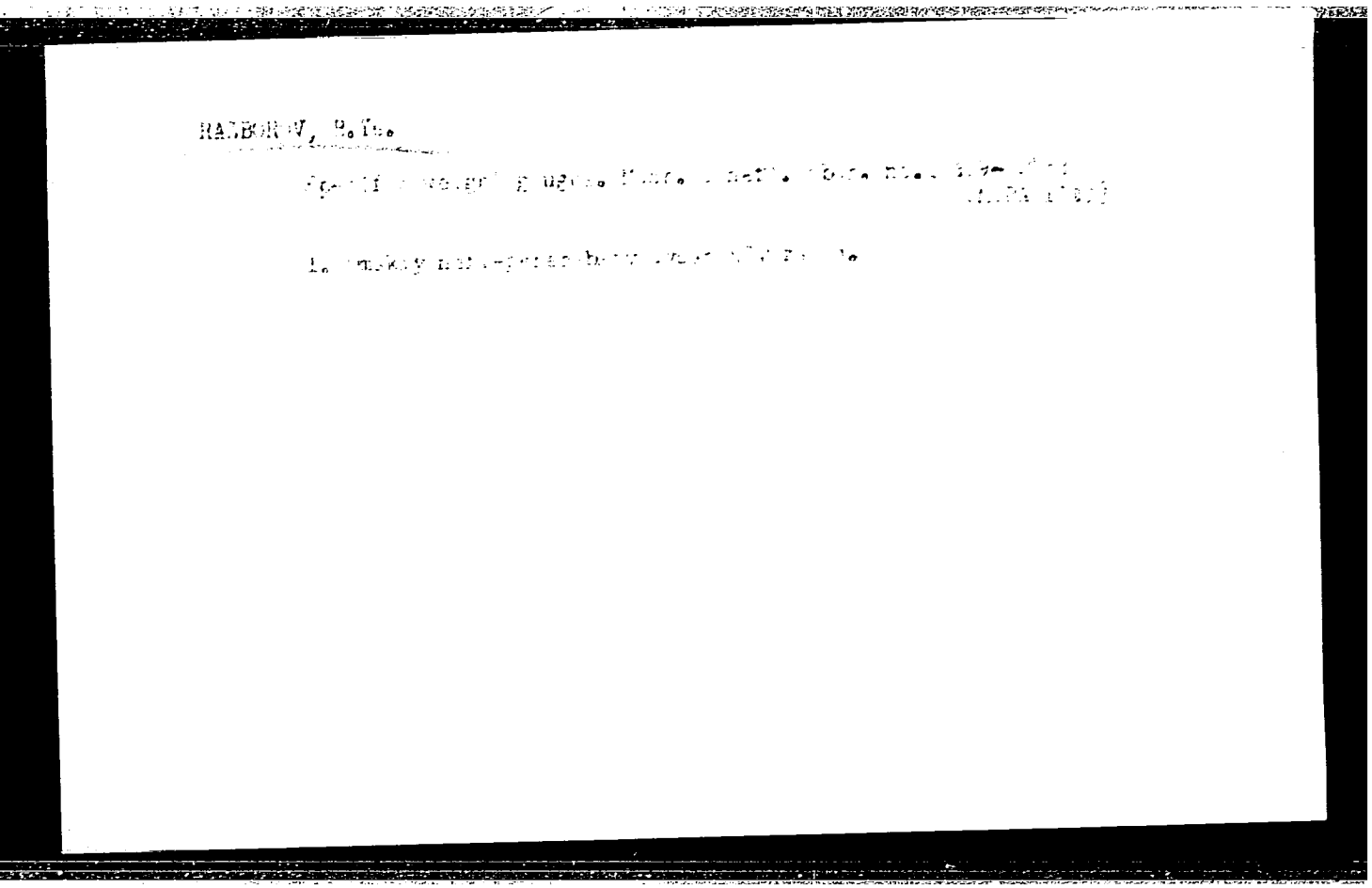
RAZBOINIKOV,Sv.; KAPONOV,Kh.

Catecholamines and their role in cardiovascular diseases. Suvr. med. (Sofiia) 15 no.3:38-47 '64.

RAZBOINIKOV, Sv.; STOIANOV, P.K.

On shoulder and hand changes in chronic coronary disease and myocardial infarct. Suvrem.med.,Sofia no.6:121-125 '59.

1. Iz Klinikata po bolnichna terapiia pri VMI - Sofiia. Zav. katedrata: prof. Al. Pukhlev.i Poliklinikata na Upravl. "Trudova povinnost" Gl.lekar: P.I. Kiuchukov.
(CORONARY DISEASE compl.)
(MYOCARDIAL DISEASE compl.)



RAZBORSHCHUK, S., inzh.

Observing the settling of grain elevators. Muk.-elev.prom. 27 no.12:20-21 D '61. (MIRA 15:2)

1. Kiyevskiy mel'nichnyy kombinat No.1.
(Grain elevators)

RAZBORSHCHUK, S., inzh.

Using natural gas for heating grain dryers. Muk.-elev. prom. 27 no.2:14-15 F '61. (MIRA 14:4)

1. Kiyevskiy mel'kombinat No.1.
(Grain—Drying) (Gas, Natural)

BULGARIA

Sv. RAZBOYNIKOV, A. NIKOLAEV and V. PETROV, Department of Internal Medicine and Therapeutics (Katedra po vutreshni bolesti i terapiya) Head (rukovoditel na katedrata) Prof A. PUKHLEV; and Department of Rentgenology and Radiology (Katedra po rentgenologiya i radiologiya) Head Prof A. NIKOLAEV, Medical College (VMI) Sofia.

"Case of Generalized Hyperostosis with Pachidermia - Touraine-Solente and Cole Disease."

Sofia, Rentgenologiya i Radiologiya, Vol 2, No 2, Apr-Jun 63; pp 1-9.

Abstract [English summary modified]: Description of this rare syndrome in young man aged 17, first case ever reported in Bulgaria. Complexities of differential diagnosis; main symptoms differentiating this case from those previously reported in literature are changes in sella turcica indicating pituitary-diencephalic causes. No abnormalities in Ca metabolism. Six rentgenograms; 26 references: 19 Western, 3 Soviet, 2 Bulgarian, Polish, Czech.

1/1

KURDZHIEV, B.; LAZAROV, B.; RAZBOINIKOV, Sv.; VELEV, Tr.

Simultaneous clinico-anatomical investigations on the frequency of cardiovascular lesions in rheumatic heart disease and their significance in consecutive decompensation. Nauch. tr. Med. akad. Chervenkov, Sofia 1 no.1:203-228 1953.

1. Predstavena ot prof. B.Kurdzhiev, zavezhdashch Katedrata po obshcha patologiia i patologichna anatomiia.
(CONGESTIVE HEART FAILURE, etiology and pathogenesis, rheum. heart dis.)
(RHEUMATIC HEART DISEASE, complications, congestive heart failure)

RAZBORSEK, J.

Yugoslavia (430)

Technology

Glue as an adhesive for bonding light metals. p. 156, Nova Proizvodnja, Vol. 2, no. 2/4, August 1951.

East European Accessions List, Library of Congress, Vol. 2, No. 3, March 1953. UNCLASSIFIED.

136-3-19/25

AUTHOR: Razdelishin, A. N.

TITLE: Conference of Central Asian Beneficiation Plant Operators. (Konferentsiya Obogatiteley Sredney Azii).

PERIODICAL: Tsvetnyye Metally, 1957, No.3, pp.83-84 (USSR)

ABSTRACT: A conference was held at Tashkent on December 24-25,1956, organised by the Central Asian inter-republic board of the Scientific-Technical Society for Non-Ferrous Metallurgy to deal with the complex utilization of non-ferrous ores and increasing productivity of beneficiation plants. 36 delegates attended to discuss three reports. In "Mineralogical Characteristics of the Main Ores of Central-Asian Deposits and Problems in the Industrial Exploitation of Rare and Scattered Elements" by E. V. Poyarkov (Sredaztsvetmetrazvedka organisation) details of central-Asian ore deposits were given and indications of existing shortcomings in their exploitation and investigation stated. K. S. Tsvetkov, of the Altyn Topkan beneficiation works, presented his report "On the Present State and Further Improvement of the Treatment of Ores in Beneficiation Works". He considered the effects of ore variability and discussed the operation of several central-Asian plants and how this could be improved and commended the achievements of the

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Conference of Central Asian Beneficiation Plant Operators.

Lyangar (improved scheelite flotation and better molybdenum concentrates) and Kumysh (adoption of heavy-suspension methods). The third report was "Present Direction in the Development of Beneficiation Plant Automation" by A. N. Razdelishin. This considered the latest automation equipment and its application, contributions were also made by G. A. Sedova (Giprotsvetmet) on beneficiation-plant design and improvements in technology; by N. I. Burtsev (Altyn-Topkan beneficiation works) on the use of collective flotation with subsequent separation of the collective concentrate; by Ye. A. Gurevich (Ac.Sc. of the Uzbek SSR) on work by the academy on new flotation reagents; by Lim on the beneficiation of ores in heavy suspensions at the Kumyshkanski works; by S. G. Kvantsov on the complex utilization of Chorukh-Dayron deposit ores; by A.K.Kuzovlev on non-cyanide flotation and the turbocyclone. Some facts about the operation of various plants were also communicated. N. M. Kondratov (Uzbedgiprotsvetmet) closed the conference with a discussion of the desirability of establishing a branch of the Mekhanobr organisation in Tashkent and the staff and facilities this would require.

AVAILABLE: Library of Congress

RAZDOLISHIN, A.N.

Conference of workers in ore dressing plants of Central Asia. (MLRA 10:4)
Tsvet. met. 30 no.3:83-84 Mr '57.
(Soviet Central Asia--Ore dressing)

RAZBOJNIKOV, S.

5

Contribution to the knowledge about barium poisoning. Z. Maretić, J. Homadovski, S. Razbojnikov, and V. Brečević (Hosp., Pula, Yugoslavia). *Med. Klin.* (Munich) 52, 1950-3(1957).—There were 3 deaths in 14–24 hrs. of 8 patients after $BaCO_3$ poisoning. The effect of Ba poisoning was tested also in rats (electrocardiograms) (the coronary symptoms show acute insufficiency, infarction, and necrosis). The toxic dose for humans is 0.2–0.5, the lethal dose 3–4 g./person. Eleven guinea pigs receiving 0.0075–0.015 g. $BaCl_2$ died within 105 min. to 47 hrs. Three guinea pigs receiving a total of 4.7 g. in small doses within 11 days died thereafter. Amelie L. Gruber

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1ST AND 2ND ORDERS

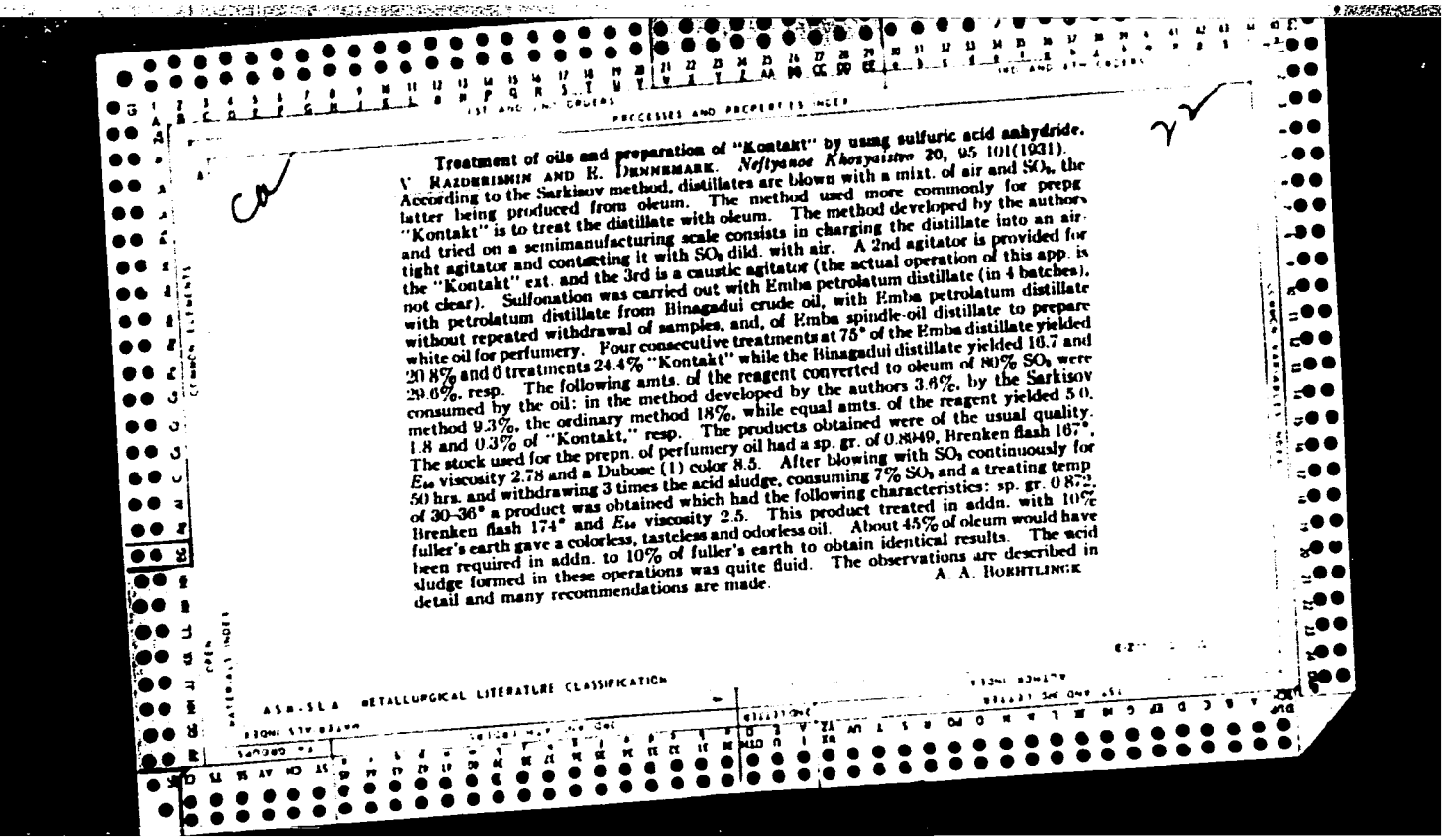
PROCESSES AND PROPERTIES INDEX

BC

B-I-3

Treatment of oils and preparation of "kontakt" by using sulphur trioxide. V. RAMENSKIN and E. DIKOMRAN (Neft. Chez., 1931, 20, 95—101).—The distillate is charged into an airtight agitator and contacted with SO_3 diluted with air. A second agitator is provided for the "kontakt" extract, and the third is a caustic agitator. The results of sulphonation of various petrolatum distillates are described. The amount of reagent (≡ oleum of 80% SO_3) consumed by the oil was 3·6% (Baskirov method 9·3, ordinary method 16%); 6 consecutive treatments at 75° gave 24·4—29·6% of "kontakt." Characteristics of the products, of the usual quality, are described. CH. ABS.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Treatment of oils and preparation of "Kontakt" by using sulfuric acid anhydride. V. RAZUMNIKIN AND E. DENNEMARK. *Neftyanoe Khozyaistvo* 20, 95-101(1931). According to the Sarkisov method, distillates are blown with a mixt. of air and SO_3, the latter being produced from oleum. The method used more commonly for prepg. "Kontakt" is to treat the distillate with oleum. The method developed by the authors and tried on a semimanufacturing scale consists in charging the distillate into an air-tight agitator and contacting it with SO_3 dild. with air. A 2nd agitator is provided for the "Kontakt" ext. and the 3rd is a caustic agitator (the actual operation of this app. is not clear). Sulfonation was carried out with Emba petrolatum distillate (in 4 batches), with petrolatum distillate from Binagadui crude oil, with Emba petrolatum distillate without repeated withdrawal of samples, and, of Emba spindle-oil distillate to prepare white oil for perfumery. Four consecutive treatments at 75° of the Emba distillate yielded 20.8% and 6 treatments 24.4% "Kontakt" while the Binagadui distillate yielded 16.7 and 29.6%, resp. The following amts. of the reagent converted to oleum of 80% SO_3 were consumed by the oil: in the method developed by the authors 3.6%, by the Sarkisov method 9.3%, the ordinary method 18%, while equal amts. of the reagent yielded 5.0, 1.8 and 0.3% of "Kontakt," resp. The products obtained were of the usual quality. The stock used for the prepn. of perfumery oil had a sp. gr. of 0.8849, Brenken flash 167°, E_{50} viscosity 2.78 and a Dubosc (1) color 8.5. After blowing with SO_3 continuously for 50 hrs. and withdrawing 3 times the acid sludge, consuming 7% SO_3 and a treating temp. of 30–36° a product was obtained which had the following characteristics: sp. gr. 0.872, Brenken flash 174° and E_{50} viscosity 2.5. This product treated in addn. with 10% fuller's earth gave a colorless, tasteless and odorless oil. About 45% of oleum would have been required in addn. to 10% of fuller's earth to obtain identical results. The acid sludge formed in these operations was quite fluid. The observations are described in detail and many recommendations are made.

A. A. BORHTLINGK

RAZDIMAKHA, G.S. [Razdymakha, H.S.] (Kamenets-Podol'skiy)

Mathematics in Mesopotamia in the light of economic documents.
Ist.-mat.zbir. 2:128-147 '61. (MIRA 15:4)
(Mesopotamia--Mathematics)

RAZDOBARIN, A.; SHAMSUTDINOV, R., inzh.

At the Labinsk Corn Processing Plant. Muk.-elev. prom. 24 no.10:7-8 O '58. (MIRA 11:12)

1.Zamestitel' direktora Labinskogo zavoda po obrabotke gibridnykh i sortovykh semyan kukuruzy (for Razdobarin). 2.Vsesoyuznyy institut mekhanizatsii sel'skogo khozyaystva (for Shamsutdinov).
(Labinsk--Corn (Maize)--Grading)

87460

S/057/60/030/012/007/011
B019/B056

24.2120

AUTHORS: Zaydel', A. N., Malyshev, G. M., Berezin, A. B., and Razdobarin, G. T.

TITLE: Spectral Examinations With "Al'fa" Research Installation. III. Time Characteristics of Plasma Radiation

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 12, pp. 1437 - 1446

TEXT: Two methods are described for recording the time characteristic of plasma: a photographic method with mechanical spectrum scanning, and a photoelectric method. The mechanical scanning of the photographic method was carried out by means of a slitted disk rotating in front of the slit of the spectrograph. The width of the disk slit varied from 0.5 to 2 mm; the speed at which the disk slit moved past the slit of the spectrograph was 5 m/sec. In the studies carried out on this spectrograph it was found that the width of lines changed during the radiation of the plasma. The widths of the NIV and OV lines and the discharge current are both graphically represented in Fig.3 as functions

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87460

Spectral Examinations With "Al'fa" Research Installation. III. Time Characteristics of Plasma Radiation

S/057/60/030/012/007/011
B019/B056

of time. In the description of the photoelectric method, measurement of spectral line intensity with the aid of a photomultiplier and an oscilloscope is first discussed. By means of a two-beam oscilloscope, the intensity of the spectral line and the discharge amperage were recorded. From the Doppler shift, the authors were able to prove an ordered motion of ions at sufficiently high speeds, and with the aid of a divider shown in Fig.9 for the spectral lines, a shift of spectral lines could be determined with high accuracy. "Al'fa" did not show any difference in the course of intensity of the two halves of the line. Intensity oscillations of the lines having a frequency of 10^5 cps are explained by a Doppler shift and by an ordered motion of the NIV ions along the direction of observation. Laboratory Assistant V. V. Semenov took part in the work. The authors thank B. P. Konstantinov for his interest. There are 10 figures and 5 references: 1 Soviet, 2 Hungarian, 1 British, and 1 Swedish.

Card 2/5

Spectral Examinations With "Al'fa" Research Installation. III. Time Characteristics of Plasma Radiation

S/057/60/030/012/007/011
B019/B056

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR (Institute of Physics and Technology of the AS USSR). Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury (Scientific Research Institute of Electrophysical Apparatus)

SUBMITTED: July 15, 1960

Card 3/5

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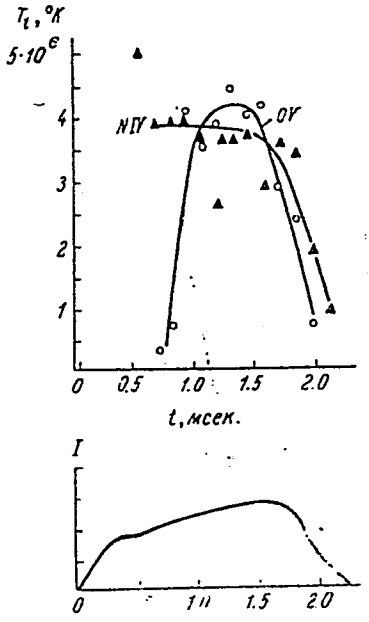
S/057/60/030/012/007/011
B019/B056



Fig, Card 4/5 Рис. 3. Зависимость ширины линий NIV 3477 и OV 2781 Å от времени.

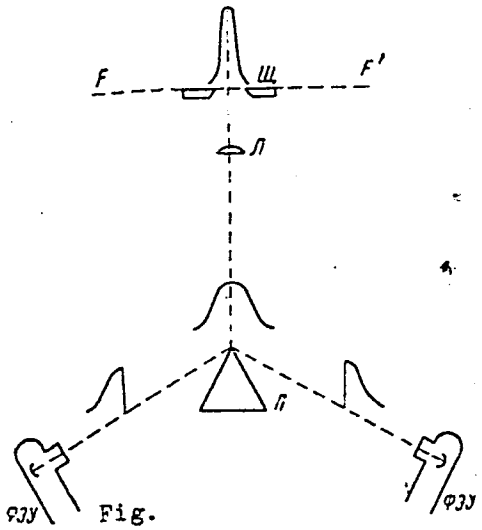


Fig. Рис. 9. Схема делителя.

MALYSHEV, G.M.; RAZDOBARIN, G.T.; SOKOLOVA, L.V.

Use of an electron-optical light amplifier with a Fabry-Perot etalon and a monochromator for time scanning of the spectrum. Dokl.AN SSSR 145 no.4:768-770 Ag '62. (MIRA 15:7)

1. Fiziko-tekhnicheskiy institut im. A.F.Ioffe AN SSSR.
Predstavleno akademikom B.P.Konstantinovym.
(Electron optics) (Spectrum analysis)

S/120/63/000/001/027/072
E039/E320

AUTHORS: Glazunov, Ye.A., Malyshev, G.M. and Razdobarin, G.T.

TITLE: Use of cylindrical optics to increase the luminosity of spectral apparatus with electron-optical amplifiers

PERIODICAL: Pribory i tekhnika eksperimenta, no. 1, 1963, 116-117

TEXT: Cylindrical optics were used for projecting the spectrum from a ДСФ-8 (DSF-8) spectrograph onto the photocathode of an electron-optical amplifier. Two identical cylindrical quartz lenses were arranged at right-angles to each other so that the first lens increased the spectral dispersion by 8 to 12 times, while the second lens decreased the height of the spectrum by ~ 8 times, i.e. from 12 mm down to ~ 1.5 mm. This enabled the full height of the spectrum to be focused onto the photocathode of the electron-optical amplifier. The apparatus was used for measuring the change in contour with time of the 4047 Å line from a ПРК-4 (PRK-4) mercury lamp. A time resolution of 0.1 μs was obtained. There are 2 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR (Physico-technical Institute of the AS USSR)

SUBMITTED: March 6, 1962

Card 1/1

S/057/63/033/002/009/023
B108/B186

AUTHORS: Malyshev, G. M., Razdobarin, G. T., Sokolova, L. V.

TITLE: Use of the Fabri-Pérot calibration instrument with a monochromator and an electron-optical amplifier for the time-base sweep of a spectrum

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 33, no. 2, 1963, 191-199

TEXT: A method of using a Fabri-Pérot interferometer in recording the contours of spectral lines by means of an electron-optical amplifier is described. The arrangement is similar to that usually employed with a monochromator for preliminary dispersion (DAN SSSR, 145, 4, 768, 1962), but no diaphragm is used behind the outlet slit of the monochromator. Hence the illuminating power of this arrangement is by about one order of magnitude greater than that of the usual combinations of interferometer and monochromator plus photomultiplier. This is proven by corresponding calculation. Testing results are given. There are 6 figures and 2 tables.

Card 1/2

Physico-Tech Inst AS USSR im A F Ioffe.

L 16566-66 EWT(1)/T IJP(c)
ACC NR: AP6006959 SOURCE CODE: UR/0368/66/004/002/0105/0111

AUTHOR: Malyshev, G. M.; Razdobarin, G. T.

48
B

ORG: none

TITLE: Photoemulsion sensitivity and its comparison with photocathode sensitivity

SOURCE: Zhurnal prikladnoy spektroskopii, v. 4, no. 2, 1966, 105-111

TOPIC TAGS: photographic emulsion, photocathode, photographic property, photo analysis, light emission, photographic equipment

ABSTRACT: Fluctation limitations of the sensitivity of a photoemulsion are investigated. Conditions are considered for the minimum of these limitations. The area of a photoemulsion corresponding to minimal losses of the number of quanta at a given precision of their registration is suggested. Estimations are given indicating the growth of light expenditures with the increase of the area used in comparison with that of the optimal one. Comparison of both photoemulsion and photocathode sensitivities is made. It is also shown that with the increase of the range of exposition change a certain deteriation of the photoemulsion sensitivity takes place. A selection of working area of expositions is

Card 1/2 UDC: 535.215

L 16566-66
ACC NR: AP6006959

proposed which, in contrast to the linear part of the characteristic curve, allows one to measure with lesser light losses and over a wider range of exposition changes. Orig. art. has: 5 formulas. [Based on author's abstract]

SUB CODE: 14, 09/ SUBM DATE: 30Nov64/ ORIG REF: 008/ OTH REF: 024/

Card 2/2 vmb

L 29304-66 EWT(1)/EWG(r) IJP(c) AT

ACC NR: AP6018053 SOURCE CODE: UR/0020/66/168/003/0554/0555

AUTHOR: Malyshev, G. M.; Ostrovskaya, G. V.; Razdobarin, G. T.; Sokolova, L. V. 5

ORG: Physicotechnical Institute im. A. F. Ioffe, Academy of Sciences SSSR (Fiziko-tekhnicheskiy institut Akademii nauk SSSR)

TITLE: Determination of temperature and electron concentration in a plasma arc from Thompson scattering of laser radiation 21

SOURCE: AN SSSR. Doklady, v. 168, no. 3, 1966, 554-555

TOPIC TAGS: laser, electron density, plasma arc, ~~Thompson scattering~~, plasma diagnostics

ABSTRACT: The temperature and electron concentration in a d-c plasma arc in a magnetic field were determined from the scattering of laser radiation. The experimental arrangement is shown in Fig. 1. The duration of the 25-J ruby laser operating at

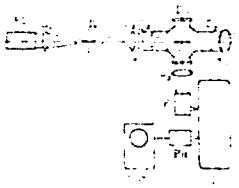


Fig. 1. Experimental arrangement

RL - Ruby laser; L_1, L_2, L_3 - lenses; D_1, D_2, D_3 - diaphragms; W_1, W_2 - windows; DT - discharge tube; P - prism; M - monochromator; PH - photomultiplier; OSC - oscillograph.

Card 1/3 UDC: 533.9.07

λ = 6943 Å was 0.5 μsec. The 800-Oe magnetic field was parallel to the discharge axis. The laser radiation was observed at a 90° angle from the incident radiation. This radiation was collected by lens L_3 from a volume 7 mm long and 0.6 mm in diameter into a solid angle of 1/32 steradian. The discharge tube had a 50-mm diameter. The plasma under investigation was at the center of the discharge tube, 140 mm from the cathode. The laser pulse was activated in the middle of the discharge, the duration of which was several dozen seconds. The pressure of the helium flow in the tube was 0.2 mm Hg. Rayleigh scattering was used to calibrate the system. The slit width of the monochromator was 10Å. The experimental results are shown in Fig. 2.

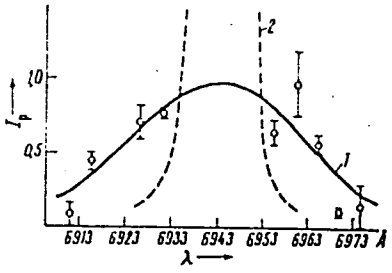


Fig. 2. The curve of the laser radiation scattered by electrons (1) and the curve of parasitically scattered light (2)

The electron temperature determined from the halfwidth of the curve of Fig. 2 was T_e = 1.8 ev. The electron concentration was determined to be 2.5 x 10^{13} cm^{-3}.

L 29364-66

ACC NR: AP6018053

Since the parameter a (The Physics of Fluids, no. 8, 1965, p. 208) was caluclated to be much smaller than 1, the scattering of laser radiation by electrons was attributed to Thompson scattering. Orig. art. has: 2 figures. [CS]

SUB CODE: 20/ SUBM DATE: 13Jul65/ ORIG REF: 003/ OTH REF: 006/ ATD PRESS: 5108

Card 3/3

L 9207-66 EWT(1)/EEC(k)-2/T IJP(c)

ACC NR: AR6000102 SOURCE CODE: UR/0058/65/000/008/A016/A016

62
B

SOURCE: Ref. zh. Fizika, Abs. 8A147

AUTHORS: Zaydel', A. N.; Mayshev, G. M.; Razdobarin, G. T.

ORG: none

TITLE: Characteristics of an installation with an electrooptical intensifier and a Fabry-Perot etalon

CITED SOURCE: Tr. Komis. po spektroskopii. AN SSSR, t. 2, vyp. 1, 1964, 551-560

TOPIC TAGS: interferometer, electrooptic image intensifier, optic resolution, monochromator, electrooptic photography

TRANSLATION: The installation, which consists of a Fabry-Perot etalon, a monochromator, and an electrooptical intensifier (EOI), is characterized by large transmissivity and a high resolution time. The sensitivity of the installation is determined by the parameters of the EOI--photographic film system. It is shown than by suitable choice of the amplification coefficients the sensitivity of the system can be made not lower than the sensitivity of a photomultiplier and exceeds the sensitivity of photographic film by one or two orders of magnitude.

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 000/ OTH REF: 000

Card 1/1 nds

ACCESSION NR: AT4025293 S/0000/63/000/000/0049/0061

AUTHORS: Maly*shev, G. M.; Razdobarin, G. T.

TITLE: Sensitivity of electron optical amplifier

SOURCE: Diagnostika plazmy* (Plasma diagnostics); sb. statey. Moscow, Gosatomizdat, 1963, 49-61

TOPIC TAGS: electron optical photography, photoelectric emission, photoelectron multiplier, photoelectrooptical amplifier, photocathode quantum yield

ABSTRACT: The authors review the choice of optimal sensitivity and gain of electron-optical amplifiers when used for the photography of high-speed processes and conclude that an advantageous receiver sensitivity comparison should be based on their equivalent quantum yields. It is shown that the equivalent quantum yield of an electron optical amplifier can be made close to the quantum yield of the

Card 1/4

photocathode if the gain is chosen correctly. The choice of the gain is determined by the number of image elements and the measurement accuracy, which must be reconciled with the number of quanta. For each value of the gain, starting with some limit, there is a definite interval of measurable number of quanta and a corresponding interval within which the quantum yield of the electron optical amplifier is close to its optimal value (the quantum yield of the photocathode). This interval can be determined from the known curve of equivalent quantum yield of the photographic film. If the measured range of exposures is sufficiently broad, this interval becomes somewhat narrower at low gain. It broadens with increasing gain. Too high a gain for a given number of quanta does not make it possible to obtain the necessary number of image elements and the accuracy attainable when the gain is optimally chosen. The noise due to the dark current of an electron optical amplifier is much smaller than the noise of a photomultiplier, and need be taken into account only when the exposure time is very large. Orig. art. has:

ACCESSION NR: AT4025293

1 figure and 8 formulas.

ASSOCIATION: None

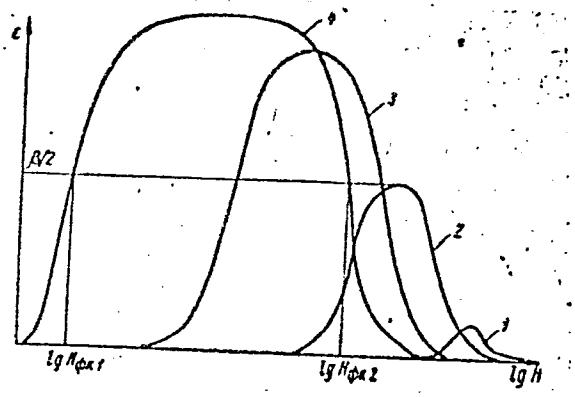
SUBMITTED: 19Oct63 DATE ACQ: 16Apr64 ENCL: 01

SUB CODE: OP, NP NR REF SOV: 011 OTHER: 002

Card 3/4

ACCESSION NR: AT4025293

ENCLOSURE: 01



Approximate variation of equivalent quantum yield of an electron optical amplifier at different gains κ (curves 2, 3, 4) and equivalent quantum yield of photographic film (curve 1). $H_{ФК}$ — exposure

Card 4/4

RAZDOBARIN, P.

Let us make ourselves familiar with the PPM-2 coal loading machine. Mast. ugl. 2 no.12:8 D '53. (MLRA 6:11)

1. Prokhodchik shakhty No.3 - 3bis kombinata Kuzbassugol'.
(Coal handling machinery)

KUZNETSOV, N.A., otv.red. VITKOVSKIY, A.P., red.; BOZHENKO, Ye.F., red.; GAVRILENKO, I.G., red.; GRINEK, V.S., red.; IGRUNOV, N.S., red.; KRUPA, G.D., red.; RAZDOBARKIN, V.I., red.; RYABOKOBYLENKO, V.I., red.; SEMENOV, M.K., red.; CHEFRANOV, B.N., red.; FUNSHTEYN, D.A., red.; PETROPOL'SKAYA, O.A., red.

[Belgorod Boiler-Making Factory] Belgorodskii kotlostroitel'nyi. Voronezh, TSentral'noe-Chernozemnoe knizhnoe izd-vo, 1964. 185 p. (MIRA 18:7)

1. Belgorodskiy Gosudarstvennyy kotlostroitel'nyy zavod. 2. Direktor Belgorodskogo Gosudarstvennogo kotlostroitel'nogo zavoda (for Chefranov). 3. Nachal'nik byuro tekhnicheskoy informatsii i izobretatel'stva Belgorodskogo Gosudarstvennogo kotlostroitel'nogo zavoda (for Gavrilenko). 4. Glavnyy konstruktor spetsial'nogo konstrukterskogo byuro energeticheskikh kotlov Belgorodskogo Gosudarstvennogo kotlostroitel'nogo zavoda (for Semenov). 5. Zamestitel' glavnogo inzhenera Belgorodskogo Gosudarstvennogo kotlostroitel'nogo zavoda (for Ryabokobylenko).

RA'KOSHKIN, A.Kh., aspirant

Vibrations caused by milling a contour with end cutters. Izv. vys. ucheb. zav.; mashinostr. no.6:160-166 '65. (MIRA 18:8)

RAZDOBREYEV, A.Kh., aspirant

Instantaneous average and extremal values of cutting forces in milling. Izv. vys. ucheb. zav.; mashinostr. no.5:177-186 '65. (MIRA 18:11)

S/035/62/000/012/044/064
A001/A101

AUTHOR: Razdobreyev, V. A.

TITLE: The use of Hausbrandt's "auxiliary symbols" for calculating coordinates of control points

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 12, 1962, 9, abstract 12G70 ("Tr. Omskogo s.-kh. in-ta", 1962, v. 47, no. 2, 43 - 52)

TEXT: In the author's opinion, Hausbrandt's "auxiliary symbols" (RZhAstr, 1957, no. 8, 7026) should be widely used in calculating coordinates of field examination points for aerial photographs. He shows how, using these "auxiliary symbols", resections can be calculated by the known formulae of I. Yu. Pranis-Pranevich and J. Delambre, combined intersections by tangents of directional angles, and also coordinates of points determined by the polar method.

V. P.

[Abstracter's note: Complete translation]

Card 1/1